Russian Journal of Physical Chemistry A 2004 vol.78 N2, pages 303-304

Self-diffusion of molecules in aqueous solutions of tetramethylurea

Rodnikova M., Samigullin F., Bartel I., Kayumova D.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Solutions of tetramethylurea (I) in light and heavy water were studied by the proton spin echo method over a wide concentration range at different temperatures. The energies of self-diffusion activation for species in these systems were calculated. In the both systems, the lowest coefficient of self-diffusion and the highest energy of activation for all the temperatures studied (288 to 313 K) were found for its ~20 mol % solution, which corresponds to a congruently melting compound in the solid phase and to maximum sound viscosity, density, and speed in aqueous solutions of tetramethylurea. The low-concentration range of compound I (from 1.2 to 5 mol %) proved to be featureless.